Certificate HK07/01191.00

The management system of

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No.20 & No.26 (Except 1F, 2F&3F) Free Trade Zone, Shatoujiao, Shenzhen City, Guangdong Province, China

has been assessed and certified as meeting the requirements of

ISO 9001:2000

For the following activities

Design and Sales of Mainboards, Personal Computers, Notebooks, and Peripheral Cards;
Design and Manufacturing of Mainboards and Peripheral Cards.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization

This certificate is valid from 16 March 2007 until 15 March 2010
Issue 1. Certified with SGS since March 2007

Multiple certificates have been issued for this scope
The main certificate is numbered HK07/01191.00

Authorised by

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Certificate No.

PRC-HSPM-1172

Issued: July 10, 2007
Revision: N/A
Expiration: July 09, 2010

IECQ Certificate of Hazardous Substance Process Management (HSPM)

applicable to the European Directive 2002/95/EC ("RoHS") requirements.

The Supervising Inspectorate (SGS-CSTC Standards Technical Services Co., Ltd.), sponsored by the United States National Authorized Institution, ECCB certify that

ECS Manufacturing (Shenzhen) Co., Ltd.
No. 20 & 26 (except 1F, 2F & 3F),
Free Trade Zone, Shatoujiao,
Shenzhen, Guangdong Province, P.R. China

Has developed and implemented Hazardous Substances Process Management, procedures, and related processes in compliance with the applicable requirements for HSPM organization approval which is in accordance with the Basic Rules IECQ-01 and Rules of Procedure QC 001002-5 "IECQ Hazardous Substance Process Management" of the IEC Quality Assessment System for Electronic Components (IECQ), and with respect to the Specification QC 080000 IECQ HSPM.

This certification is applicable to all electronic components and related materials and processes for the

Design and manufacture of Mainboards and Peripheral Cards.

Issued by Certification Authorities:

Electronic Component Certification Board

Signed:

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The validity of this certificate is maintained through on-going surveillance inspections.

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Preface

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Version 1.0

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

Chapter 1
Introducing the Motherboard

Describes features of the motherboard.

Go to page 1

Chapter 2
Installing the Motherboard

Describes installation of motherboard components.

Go to page 7

Chapter 3
Using BIOS

Provides information on using the BIOS Setup Utility.

Go to page 27

Chapter 4
Using the Motherboard Software

Describes the motherboard software

Go to page 45

Chapter 5
Hybrid Graphics® Technology Support

Describes the Hybrid Graphics® Technology

Go to page 55

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Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the A780GM-A Ultra motherboard. This motherboard is a high performance, enhanced function motherboard that supports socket for AMD Phenom™ processor (socket AM2+)/Athlon™ 64 X2 Dual-Core/Athlon™ 64/ Sempron™ processors for high-end business or personal desktop markets.

The motherboard incorporates the AMD 780G Northbridge (NB) and SB750 Southbridge (SB) chipsets. The Northbridge supports the HyperTransport™ 3.0 interface. The memory controller supports DDR2 memory DIMM frequencies of 1066*[1] (AM2+)/800/667/533/400. It supports four DDR2 slots with maximum memory size of 32 GB*[2]. One PCI Express x16 slot, intended for Graphics Interface, are fully compliant to the PCI Express Genaration 2.0 (version 2.0).

The SB750 Southbridge supports three PCI slots which are PCI 2.3 compliant. In addition, two PCI Express x1 slots are supported, fully compliant to the PCI Express Generation 2.0 (version 2.0). It integrates USB 2.0 interface, supporting up to twelve functional ports (six USB ports and three USB 2.0 headers support additional six USB ports). One onboard IDE connector supports two IDE devices in Ultra ATA 133/100/66/33 modes. The Southbridge integrates a Serial ATA host controller, supporting six SATA ports with maximum transfer rate up to 3.0 Gb/s each.

There is an advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, one VGA port, one HDMI port, six USB ports, one ESATA port, one optical SPDIFO port, one LAN port and audio jacks for microphone, line-in and 6/8-channel High Definition Audio output.

***** *1. Whether 1066 MHz memory speed is supported depends on the CPU being used.*

2. Currently, the memory maximum size we have tested is 8 GB (2 GB per dimm).

Feature

Processor

This motherboard uses a socket AM2+/AM2 that carries the following features:

- Accommodates AMD Phenom™ processor (socket AM2+)
  AMD Athlon™ 64 X2 Dual-Core/Athlon™ 64/Sempron™ processors
- Supports HyperTransport™ (HT) 3.0 interface speeds

HyperTransport™ Technology is a point-to-point link between two devices, it enables integrated circuits to exchange information at much higher speeds than currently available interconnect technologies.

This board supports CPU up to 140W TDP only.

Chipset

The AMD 780G Northbridge (NB) and SB750 Southbridge (SB) chipsets are based on an innovative and scalable architecture with proven reliability and performance.

AMD 780G (NB)

- One x4 A-Link Express II interface (PCI Express 1.1 compliant) for connection to an AMD Southbridge
- Supports one PCI Express x16 for Graphics Interface, fully compliant to the PCI Generation 2.0 (version 2.0).
- Proven Radeon™ graphics powering DirectX®10
- Enhanced Digital Display integration
- Fully ACPI 2.0, OnNow, and IAPC (Instantly Available PC) power management
- Single chip solution in 55nm, 1.1 V CMOS technology
- Integrated ATI Hybrid Graphics, ATI Avivo™ HD[1], ATI PowerPlay™, Low Power Design, AMD Cool'nQuiet™ 2.0, ATI SurroundView™, AMD OverDrive and AMD RAIDXpert™

SB750 (SB)

- Compliant with PCI 2.3 specification at 33 MHz
- Supports six Serial ATA devices which speeds up to 3.0 Gb/s
- Complies with SATA 2.5 specification
- Supports both SATA 1.5 and SATA3.0 compliance devices
- Supports AHCI hardware assist to support advanced features such as NCQ (Native Command Queuing), Hot Plug, and Device or Host initiated power Management (DIIPM/HIPM)
- Integrated USB 2.0 Host Controller supporting up to twelve USB 2.0 ports
- Integrated IDE controller supports Ultra ATA 133/100/66/33 modes

Memory

- Supports DDR2 1066 (AM2+)/800/667 DDR SDRAM with Dual-channel architecture
- Accommodates four unbuffered DIMMs
- Up to 8 GB per DIMM with maximum memory size up to 32 GB*

Audio

- All DACs support 192K/96K/48K/44.1KHz DAC sample rate
- High-quality analog differential CD input
- Software selectable 2.5V/3.75V VREFOUT
- Meets Microsoft WLP 3.08 audio requirements
- Direct Sound 3D™ compatible

Onboard LAN

- Supports PCI Express™ 1.1
- Integrated 10/100/1000 transceiver
- Wake-on-LAN and remote wake-up support

Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express x16 for Graphics Interface
- Two PCI Express x1 slots
- Three 32-bit PCI v2.3 compliant slots
- One IDE connector supporting up to two IDE devices
- One floppy disk drive interface
- Six 7-pin SATA connectors

This motherboard supports Ultra DMA bus mastering with transfer rates of 133/100/66/33 MB/s.

Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One VGA port
- One HDMI port
- One ESATA port
- Six USB ports
- One LAN port
- One optical SPDIFO port
- Audio jacks for microphone, line-in and 6/8-channel High Definition Audio output.

BIOS Firmware

The motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

1. Some hardware specifications and software items are subject to change without prior notice.

2. Due to chipset limitation, we recommend that motherboard be operated in the ambiance between 0 and 50°C.

Motherboard Components

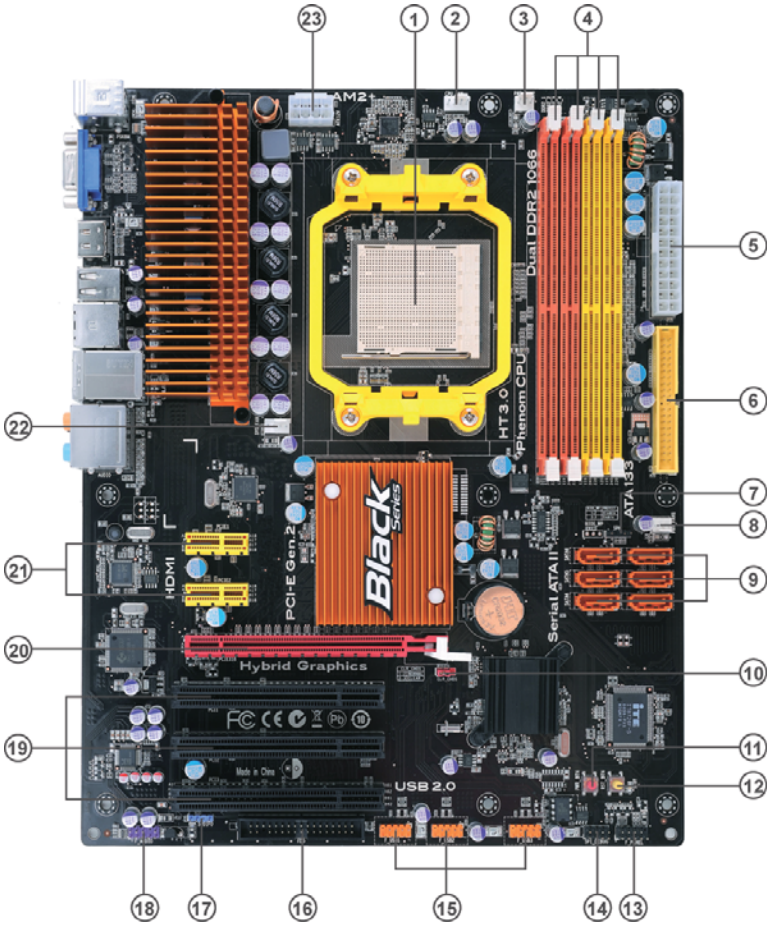


Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	Socket for AMD Phenom™ processor (socket AM2+)/ Athlon™64 X2 Dual-Core/Athlon™ 64/Sempron™ processors
2. CPU_FAN	CPU cooling fan connector
3. PWR_FAN2	Power cooling fan connector
4. DDR2_1~4	240-pin DDR2 SDRAM slots
5. ATX_POWER	Standard 24-pin ATX power connector
6. IDE	Primary IDE connector
7. SPK	Speaker header
8. PWR_FAN1	Power cooling fan connector
9. SATA1~6	Serial ATA connectors
10. CLR_CMOS	Clear CMOS jumper
11. PWR_BTN	Power on button
12. RST_BTN	Reset button
13. F_PANEL	Front panel switch/LED header
14. SPI_DEBUG	SPI DEBUG header
15. F_USB1~3	Front Panel USB headers
16. FDD	Floppy disk drive connector
17. SPDIFO	SPDIF out header
18. F_AUDIO	Front panel audio header
19. PCI1~3	32-bit add-on card slots
20. PCIEX16	PCI Express x16 slot for graphics interface
21. PCIE1~2	PCI Express x1 slots
22. SYS_FAN	System cooling fan connector
23. ATX12V	8-pin +12V power connector

This concludes Chapter 1. The next chapter explains how to install the motherboard.

Memo

Chapter 2
Installing the Motherboard

Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the ATX system case. Firstly, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, this motherboard supports one floppy diskette drive and two enhanced IDE drives. Make sure that your case has sufficient power and space for all drives that you intend to install.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

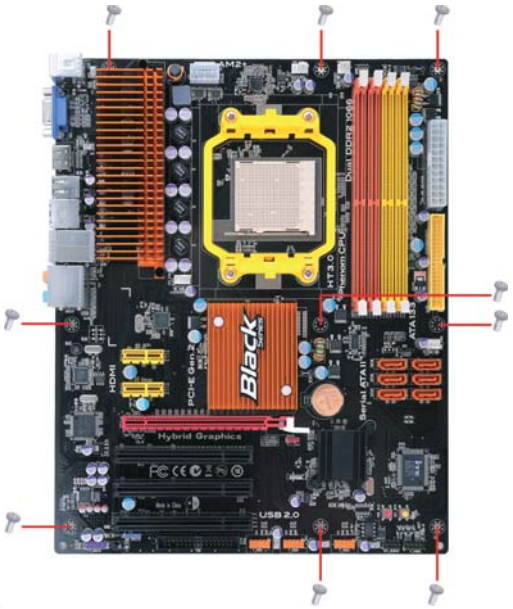
This motherboard carries an ATX form factor of 305 X 244 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



Do not over-tighten the screws as this can stress the motherboard.

Checking Jumper Settings

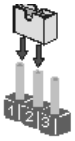
This section explains how to set jumpers for correct configuration of the motherboard.

Setting Jumpers

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

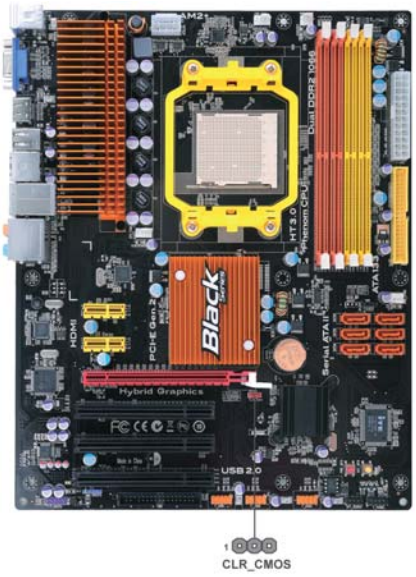
The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.



Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



Jumper Settings

Jumper	Type	Description	Setting (default)	
CLR_CMOS	3-pin	Clear CMOS	1-2: NORMAL 2-3: CLEAR Before clearing the CMOS, make sure to turn off the system.	 CLR_CMOS

To avoid the system unstability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save Changes and Exit".

Installing Hardware

Installing the Processor

Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.

Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.

Warning:

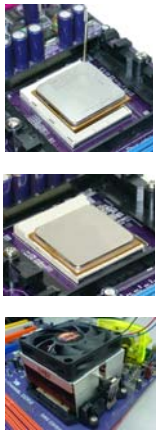
1. Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

2. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

This motherboard has a socket AM2+/AM2 processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

CPU Installation Procedure

The following illustration shows CPU installation components.



1 Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.
2 Locate the CPU cut edge (the corner with the pin hold noticeably missing). Align and insert the CPU correctly.
3 Press the lever down and apply thermal grease on top of the CPU.
4 Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.
5 Flip the levers over to lock the heat sink in place and connect the CPU cooling Fan power cable to the CPUFAN connector. This completes the installation.

To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

Installing Memory Modules

This motherboard accommodates four memory modules. It can support four 240-pin DDR2 1066 (AM2+)/800/667. The total memory capacity is 32 GB*.

DDR2 SDRAM memory module table

Memory module	Memory Bus
DDR2 667	***333 MHz***
DDR2 800	***400 MHz***
DDR2 1066	***533 MHz***

You must install at least one module in any of the four slots. Each module can be installed with 8 GB of memory.

The four DDR2 memory sockets (DDR2_1, DDR2_2, DDR2_3, DDR2_4) are divided into two channels and each channel has two memory sockets as following:

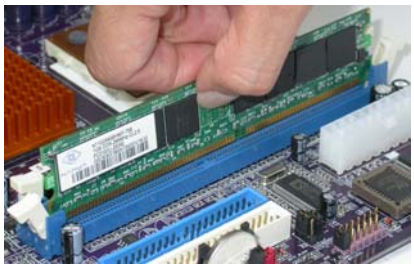
▶▶ Channel 0: DDR2_1, DDR2_2
▶▶ Channel 1: DDR2_3, DDR2_4

Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

1 This motherboard supports unbuffered DDR2 SDRAM only.
2 Push the latches on each side of the DIMM slot down.
3 Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
4 Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5 Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
6 Install any remaining DIMM modules.



For best performance and compatibility, we recommend that users install DIMMs in the sequence of DIMM3, DIMM4, DIMM1 and DIMM2.

Recommend configuration for best performance and compatibility

Number of DIMMs	DIMM 1	DIMM 2	DIMM 3	DIMM 4	AM2	AM2+ *
1					Single Channel	Unganged Mode
2					Dual Channel	Ganged Mode
3					Single Channel	Unganged Mode
4					Dual Channel	Ganged Mode

* When Unganged Mode is disabled

: operation with *normal performance*

: operation with *the best performance*

Table A: DDR2 (memory module) QVL (Qualified Vendor List)

The following DDR2 1066 (AM2+)/800/667 memory modules have been tested and qualified for use with this motherboard.

Type	Size	Vendor	Module Name
DDR2 667	512 MB	Apacer	78.91G92.9K5
		Micron	MT4HTF6464AY-667E1
		PSC	AL6E8E63J-6E1
		Ramxel	RML1520M38D6F-667
		Samsung	K4T51083QC
	1 GB	Apacer	78.01G9O.9K5
			Elpida 1GB AM4B5708GEWS7E-0637F
			AU01GE667C5KBGC/Apacer/AM4B5708CPJS7E0810C
		Corsair	VS1GB667D2/Corsair/64M8CFEG QIB0900721
		Hexon	HYNT7AUDR-30M48
		Kingston	KVR667D2N5/RAmos/RC12T083CA6-53EC
		Micron	MT8HTF12864AY-667E1
		PSC	AL7E8E63B-6E1T
			AL7E8F63J-6E1
			AL7E8F73C-6E1
		Samsung	Gold bar M378T2863DZS 0742/SEC/ZCE6 K4T1G084QD
	2 GB	Aeneon	AET860UD00-30DB08X
		Apacer	78.A1G9O.9K4
		Hexon	HYNT8AUDR-30M88
		Hynix	HYMP125U64AP8-Y5-AB-A
		Kingston	KVR667D2N5
		LeadMax	LD5PS1G831
		PSC	AL8E8F73C-6E1
		Qimonda	HYS64T256020EU-3S-C2

DDR2 800	512 MB	Infineon	HYS64T64020HU-2.5-A/Infineon/HYB18T256 800AF25
		Kingston	KVR800D2N5/512
		Micron	MT8HTF6464AY-80ED4
		Qimonda	HYS72T64000HU-2.5-B/Qimonda/HYB18T512800BF25
	1 GB	A-DATA	M2GVD6G3I41P0U1E5E/A-DATA/VD29608A8D-25EG-E0722
		Aeneon	AET760UD00-25DC08X
			AET760UD00-30DB97X/Aeneon/AET93R250B 0725
		Apacer	AU01GE800C5KBGC/Apacer/AM4B5708JQJS8E0749D
			78.01GA0.9K5
		Geil	Geil Millenary/Geil/GL2L64M088BA18H
		Hexon	ELPT7AUDR-25M48
		Kingston	KHX6400D2ULK2/2G
			KVR800D2N5/1G
		Ramaxel	RML1320EH38D7F-800/Elpida/E5108AHSE-8E-E 0705098L1
		Samsung	Gold bar M378T2953EZ3-CE7 0726/SEC/ZCE7 K4T510830E
		Silicon Power	SP001GBLRU800S01
		Smart	DM080818-HY1/Hynix/HY5PS1G831CFP-S5 C822A
		Transcend	Transcend/DIMM 5-5-5/Transcend/TQ123PGF8T0709
	2 GB	A-DATA	Red A-DATA M2OMI6H3J4720L1C5Z/A-DATA/Boxed
		Aeneon	AET860UD00-25DC08X
		Apacer	78.A1GA0.9K4
		CORSAIR	CORSAIR/CM2X2048-6400C5/CORSAIR/Boxed
		Geil	Platinum Edition/Geil/Boxed/2GB/DS
		Hexon	ELPT8AUDR-25M88
		Kingston	KVR800D2N5
		Micron	MT16HTF25664AY-800E1
		PSC	AL8E8F73C-8E1
		Qimonda	HYS64T256020EU-25F-C2
		Samsung	M378T5663QZ3-CF7/SEC/HCF7 K4T1G084QQ/DS
		Silicon Power	SP002GBLRU800S01

Type	Size	Vendor	Module Name
DDR2 1066	512 MB	Kingston	KVR1066D2N7/512
	1 GB	Kingston	KVR1066D2N7/1G
		Qimonda	HYB18T512800CF19F
		Micron	MT8HTF12864AY-1GAE1
	2 GB	Micron	DMT16HTF25664AY-1GAE1

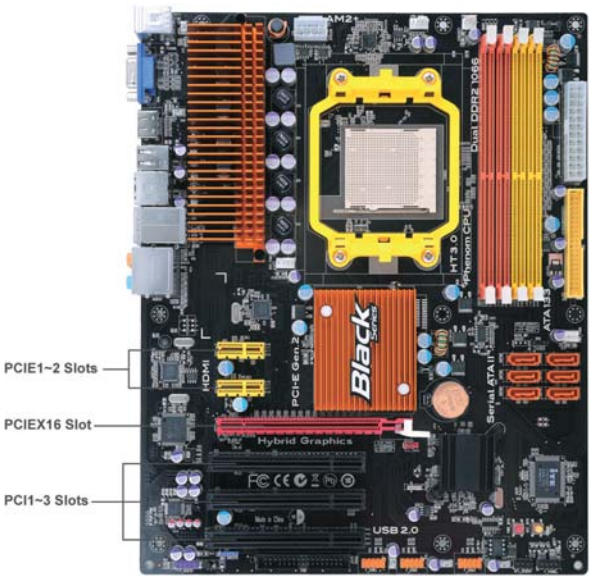
1.Due to the Phenom CPU and memory module limitation, the DRAM may need to adjust the voltage for supporting DDR2 1066. The memory modules which can be used stably are listed in the above QVL table for reference.

2.DDR2 1066 is supported when using socket AM2+ CPU.

Expansion Slots

Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



PCIE1~2 Slots The PCI Express x1 slots are fully compliant to the PCI Express Generation 2.0 (version 2.0).

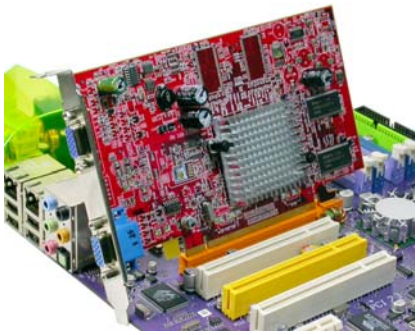
PCIEX16 Slot The PCI Express x16 slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Generation 2.0 (version 2.0).

PCI1~3 Slots This motherboard is equipped with three standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.3 compliant.

Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

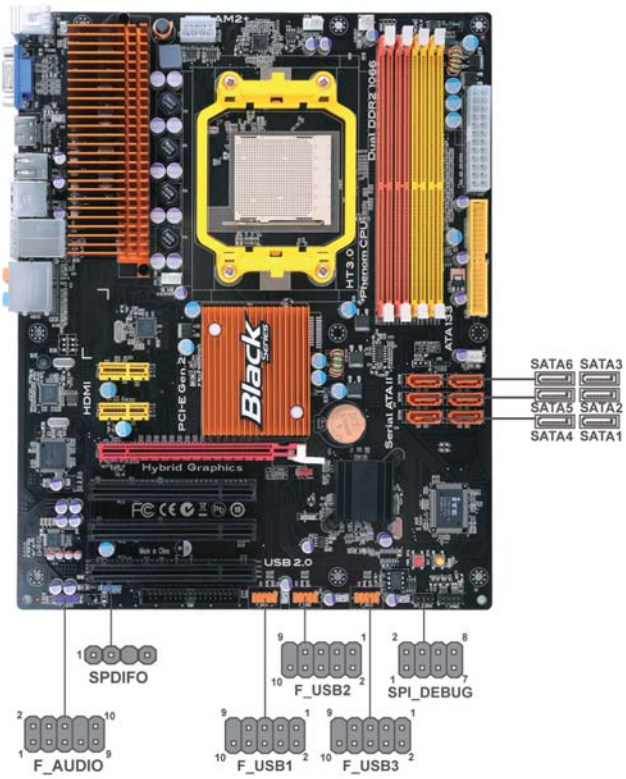
1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3 Secure the metal bracket of the card to the system case with a screw.



For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



SATA1~6: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest data transfer rates (3.0 Gb/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

SPDIFO: SPDIF out header

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name	Function
1	SPDIF	SPDIF digital output
2	+5VA	5V analog Power
3	Key	No pin
4	GND	Ground

F_AUDIO: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Pin	Signal Name
1	PORT 1L	2	AUD_GND
3	PORT 1R	4	PRESENCE#
5	PORT 2R	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY
9	PORT 2L	10	SENSE2_RETURN

SPI_DEBUG: SPI DEBUG header

This 16 MB DEBUG contains the programmable BIOS program.

Pin	Signal Name	Function
1	CHIP SELECT	Select chip
2	VCC	VCC
3	DATA OUTPUT	data output
4	HOLD	hold
5	WRITE PROTECT	BIOS write protect
6	CLOCK	clock
7	CND	CND
8	DATA INPUT	data input

F_USB1~3: Front Panel USB headers

The motherboard has six USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	USB_FP_OC0	Overcurrent signal

Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

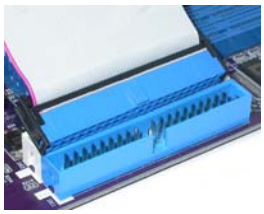
About IDE Devices

Your motherboard has one IDE interface. An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.

You must orient the cable connector so that the pin1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

IDE: IDE Connector

This motherboard supports five high data transfer SATA ports with each runs up to 3.0 Gb/s. To get better system performance, we recommend users connect the CD-ROM to the IDE channel, and set up the hard drives on the SATA ports.



IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. Installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

About SATA Connectors

Your motherboard features five SATA connectors supporting a total of five drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

SATA cable (optional)

SATA power cable (optional)

Refer to the illustration below for proper installation:

1 Attach either cable end to the connector on the motherboard.
2 Attach the other cable end to the SATA hard drive.
3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.

This motherboard supports the "Hot-Plug" function.

Installing a Floppy Diskette Drive

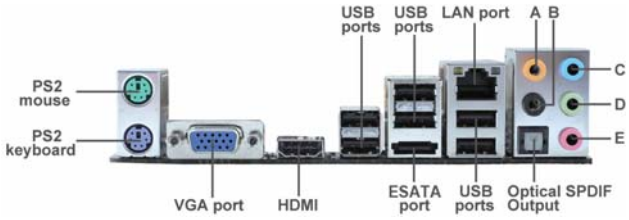
FDD: Floppy Disk Connector

This connector supports the floppy drive ribbon cable. After connecting the single end to the onboard floppy connector, connect the remaining plugs on the other end to the floppy drives correspondingly.

You must orient the cable connector so that the pin 1(color) edge of the cable corresponds to the pin 1 of the I/O port connector.

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



PS2 Mouse Use the upper PS/2 port to connect a PS/2 pointing device.

PS2 Keyboard Use the lower PS/2 port to connect a PS/2 keyboard.

VGA Port Connect your monitor to the VGA port.

HDMI Port Connect the HDMI port to the HDMI devices.

USB Ports Use the USB ports to connect USB devices.

ESATA Port Use this port to connect to an external SATA box or a Serial ATA port multiplier.

LAN Port Connect an RJ-45 jack to the LAN port to connect your computer to the network.

Optical SPDIF Output This jack connects to external optical digital audio output devices.

Audio Ports Use the audio jacks to connect audio devices. The C port is for stereo line-in signal, while the E port is for microphone in signal. This motherboard supports audio devices that correspond to the A,B, and D port respectively. In addition, all of the 3 ports, B, and D provide users with both right & left channels individually. Users please refer to the following note for specific port function definition.

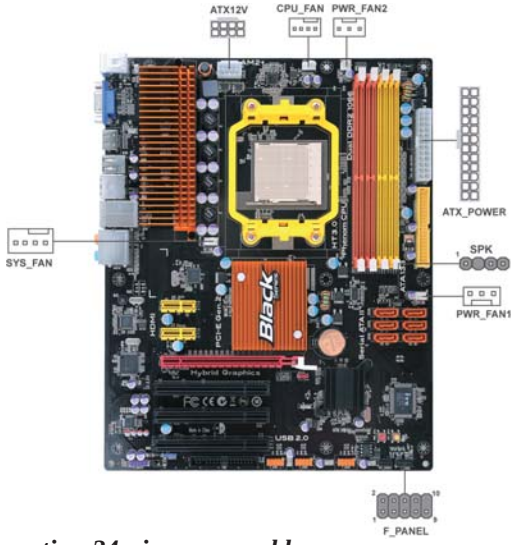
A: Center & Woofer	D: Front Out
B: Back Surround	E: Mic_in Rear
C: Line-in	-

The above port definition can be changed to audio input or audio output by changing the driver utility setting.

Connecting Case Components

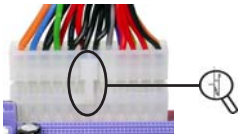
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

1 Connect the CPU cooling fan cable to **CPU_FAN**.
2 Connect the standard power supply connector to **ATX_POWER**.
3 Connect the power cooling fan connector to **PWR_FAN1/2.**
4 Connect the case speaker cable to **SPK**.
5 Connect the case switches and indicator LEDs to the **F_PANEL**.
6 Connect the system cooling fan connector to **SYS_FAN**.
7 Connect the auxiliary case power supply connector to **ATX12V**.



Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.

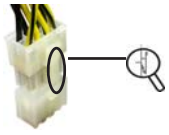


With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_POWER match perfectly.

24-pin power cable

Connecting 8-pin power cable

The ATX12V power connector is used to provide power to the CPU.



When installing 8-pin power cable, the latches of power cable and the ATX12V match perfectly.

8-pin power cable

CPU_FAN/SYS_FAN: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor
4	PWM	CPU FAN control

Users please note that the fan connector supports the CPU cooling fan of 1.1A~2.2A (26.4W max.) at +12V.

ATX_POWER: ATX 24-pin Power Connector

Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	COM
4	+5V	16	PS_ON
5	Ground	17	COM
6	+5V	18	COM
7	Ground	19	COM
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	COM

PWR_FAN1/2: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

SPK: Internal speaker header

Pin	Signal Name
1	VCC
2	Key
3	GND
4	Signal

ATX12V: ATX 12V Power Connector

Pin	Signal Name	Pin	Signal Name
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

Front Panel Header

The front panel header (F_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:

Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED (+)	2	FP PWR/SLP	*MSG LED (+)
3	HD_LED_N	Hard disk LED (-)	4	FP PWR/SLP	*MSG LED (-)
5	RST_SW_N	Reset Switch (-)	6	PWR_SW_P	Power Switch (+)
7	RST_SW_P	Reset Switch (+)	8	PWR_SW_N	Power Switch (-)
9	RSVD	Reserved	10	Key	No pin

***** *MSG LED (dual color or single color)*

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

This concludes Chapter 2. The next chapter covers the BIOS.

Memo

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest "American Megatrends Inc. " BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

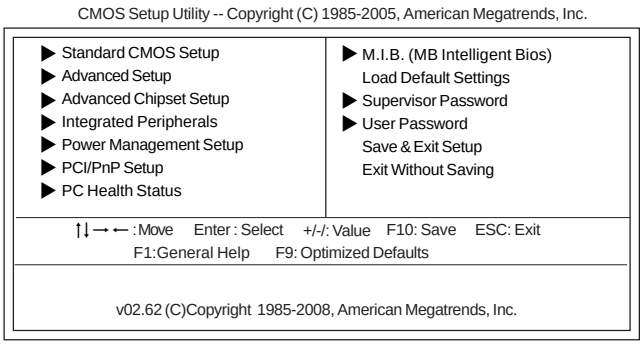
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Press the delete key to access the BIOS Setup Utility.


CMOS Setup Utility -- Copyright (C) 1985-2005, American Megatrends, Inc.
▶ Standard CMOS Setup
▶ Advanced Setup
▶ Advanced Chipset Setup
▶ Integrated Peripherals
▶ Power Management Setup
▶ PCI/PnP Setup
▶ PC Health Status
▶ M.I.B. (MB Intelligent Bios)
Load Default Settings
▶ Supervisor Password
▶ User Password
Save & Exit Setup
Exit Without Saving
↑↓→←:Move Enter: Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults
v02.62 (C)Copyright 1985-2008, American Megatrends, Inc.

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to sub menus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the sub menu.

In this manual, default values are enclosed in parenthesis. Sub menu items are denoted by a triangle ▶.

The default BIOS setting for this motherboard applies for most conditions with optimum performance. It is not suggested to change the default values in the BIOS setup and the manufacture takes no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

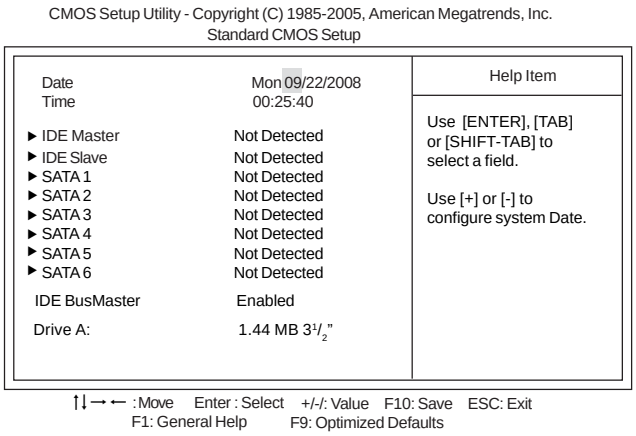
The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓→←	Scrolls through the items on a menu
+/-/PU/PD	Modifies the selected field's values
Enter	Select
F9	Loads an optimized setting for better performance
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions

For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.

Standard CMOS Setup

This option displays basic information about your system.

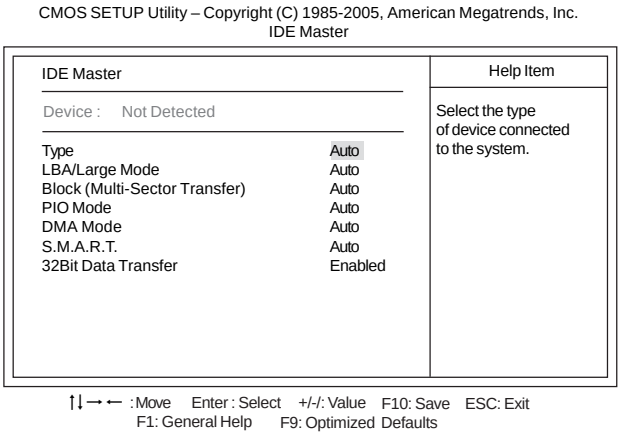


Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

▶IDE Master/Slave, SATA1~6

Your computer has one IDE channel which can be installed with one or two devices (Master and Slave). In addition, this motherboard supports six SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the IDE channel.


CMOS SETUP Utility – Copyright (C) 1985-2005, American Megatrends, Inc.
IDE Master
IDE Master
Help Item
Device : Not Detected
Select the type of device connected to the system.
Type Auto
LBA/Large Mode Auto
Block (Multi-Sector Transfer) Auto
PIO Mode Auto
DMA Mode Auto
S.M.A.R.T. Auto
32Bit Data Transfer Enabled
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

Type (Auto)

Use this item to configure the type of the IDE device that you specify. If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

LBA/Large Mode (Auto)

Use this item to set the LBA/Large mode to enhance hard disk performance by optimizing the area the hard disk is visited each time.

Block (Multi-Sector Transfer) (Auto)

If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

PIO Mode (Auto)

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

DMA Mode (Auto)

DMA capability allows users to improve the transfer-speed and data-integrity for compatible IDE devices.

S.M.A.R.T. (Auto)

The S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

32Bit Data Transfer (Enabled)

Use this item to enable or disable 32Bit Data Transfer.

Press <Esc> to return to the Standard CMOS Setup page.

IDE BusMaster (Enabled)

This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

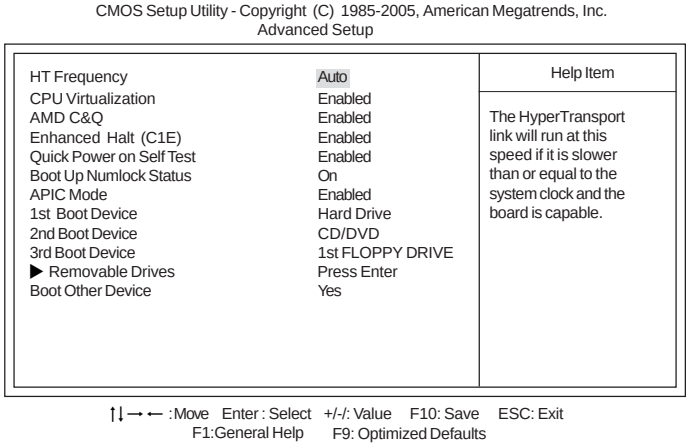
Drive A (1.44 MB 3$^{1}/_{2}$")

This item defines the characteristics of any diskette drive attached to the system. You can connect one or two diskette drives.

Press <Esc> to return to the main menu setting page.

Advanced Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.



HT Frequency (Auto)

This item enables users to adjust the HT frequency. The default setting is auto and we recommend users leave the setting unchanged. Modify it at will may cause the system to be unstable.

CPU Virtualization (Enabled)

Hardware Virtualization Technology enables processor feature for running multiple simultaneous Virtual Machines allowing specialized software applications to run in full isolation of each other.

AMD C&Q (Enabled)

This item helps the system to lower the frequency when CPU idles. When the frequency decreases, the temperature will drop automatically as well.

Enhanced Halt (C1E) (Enabled)

This item enables or disables enhanced halt.

Quick Power on Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

Boot Up Numlock Status (On)

This item defines if the keyboard Num Lock key is active when your system is started.

APIC Mode (Enabled)

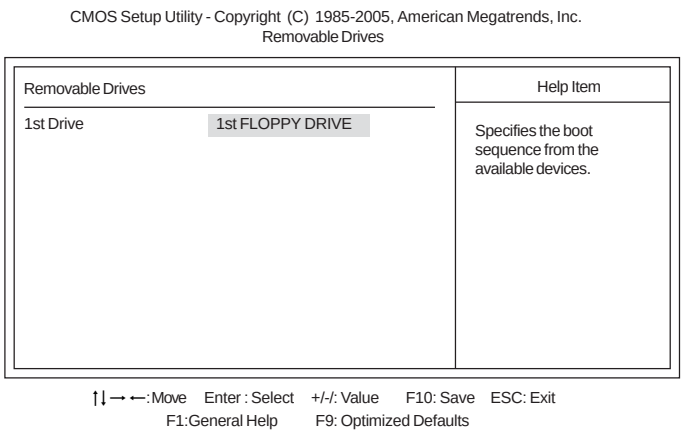
This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

1st/2nd/3rd Boot Device (Hard Drive/CD/DVD/1st FlOPPY DRIVE)

Use this item to determine the device order the computer used to look for an operating system to load at start-up time. The devices showed here will be different depending on the exact devices installed on your motherboard.

►Removable Drives (Press Enter)

Scroll to this item and press <Enter> to view the following screen:


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Removable Drives
Removable Drives
Help Item
1st Drive
1st FLOPPY DRIVE
Specifies the boot sequence from the available devices.
↑↓→←:Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Press <Esc> to return to the Advanced Setup page.

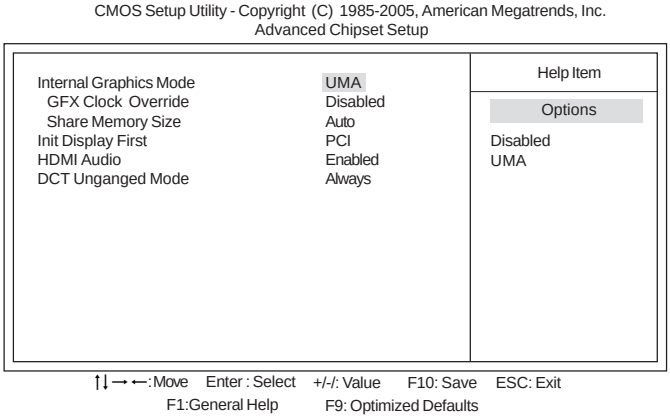
Boot Other Device (Yes)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second and Third boot devices.

Press <Esc> to return to the main menu setting page.

Advanced Chipset Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.



Internal Graphics Mode (UMA)

Use this item to choose the onboard VGA mode. You can select [Disabled] to disable the onboard VGA, [UMA] to use the system memory.

Warning: If Disabled Internal Graphics Mode, please Loading default to Enable it.

GFX Clock Override (Disabled)

Use this item to enable or disable GFX Clock Override.

Share Memory Size (Auto)

This item lets you allocate a portion of the main memory for the onboard VGA display application.

Init Display First (PCI)

Use this item to select which graphics controller to use as the primary boot devices.

HDMI Audio (Enabled)

This item is used to enable or disable the NB HDMI audio support.

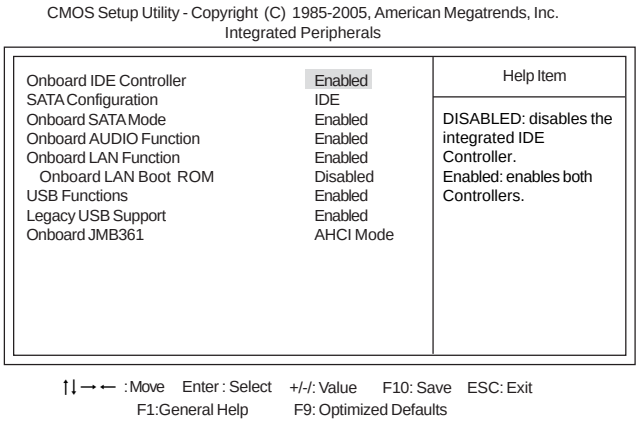
DCT Unganged Mode (Always)

This item is used to select the DCT mode (DRAM Controller mode).

Press <Esc> to return to the main menu setting page.

Integrated Peripherals

This page sets up some parameters for peripheral devices connected to the system.



Onboard IDE Controller (Enabled)

Use this item to enable or disable the onboard IDE interface.

SATA Configuration (IDE)

Use this item to show the Serial ATA Configuration options: Disabled, Compatible, Enhanced.

Onboard SATA Mode (Enabled)

Use this item to enable or disable the onboard SATA mode.

Onboard AUDIO Function (Enabled)

Use this item to enable or disable the onboard Audio function.

Onboard LAN Function (Enabled)

Use these items to enable or disable the onboard LAN function.

Onboard LAN Boot ROM (Disabled)

Use this item to enable or disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

USB Functions (Enabled)

Use this item to enable or disable the USB function.

Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices. Setting to Auto allows the system to detect the presence of USB device at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

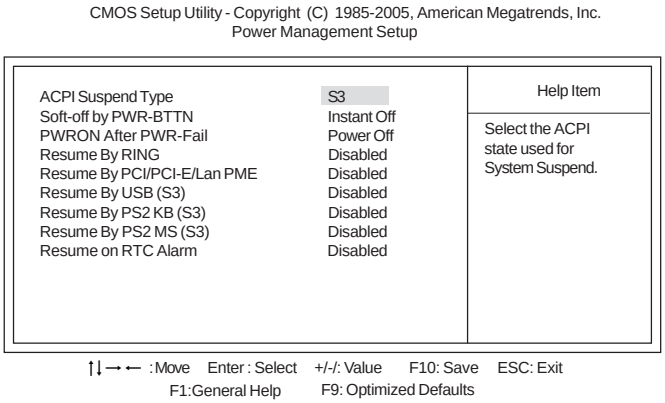
Onboard JMB361 (AHCI Mode)

Use this item to enable or disable the onboard JMB361 mode.

Press <Esc> to return to the main menu setting page.

Power Management Setup

This page sets up some parameters for system power management operation.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Power Management Setup
ACPI Suspend Type S3
Soft-off by PWR-BTTN Instant Off
PWRON After PWR-Fail Power Off
Resume By RING Disabled
Resume By PCI/PCI-E/Lan PME Disabled
Resume By USB (S3) Disabled
Resume By PS2 KB (S3) Disabled
Resume By PS2 MS (S3) Disabled
Resume on RTC Alarm Disabled
Help Item
Select the ACPI state used for System Suspend.
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

ACPI Suspend Type (S3)

Use this item to define how your system suspends. In the default, S3, the suspend mode is a suspend to RAM, i.e, the system shuts down with the exception of a refresh current to the system memory.

Soft-off by PWR-BTTN (Instant Off)

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec, then you have to hold the power button down for four seconds to cause a software power down.

PWRON After PWR-Fail (Power Off)

This item enables your computer to automatically restart or return to its operating status.

Resume By RING (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem. You must use an ATX power supply in order to use this feature.

Resume By PCI/PCI-E/Lan PME (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the PCI Modem or PCI LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI card.

Resume By USB (S3) (Disabled)

This item allows you to enable or disable the USB device wakeup function from S3 mode.

Resume By PS2 KB (S3) (Disabled)
This item enables or disables you to allow keyboard activity to awaken the system from power saving mode.

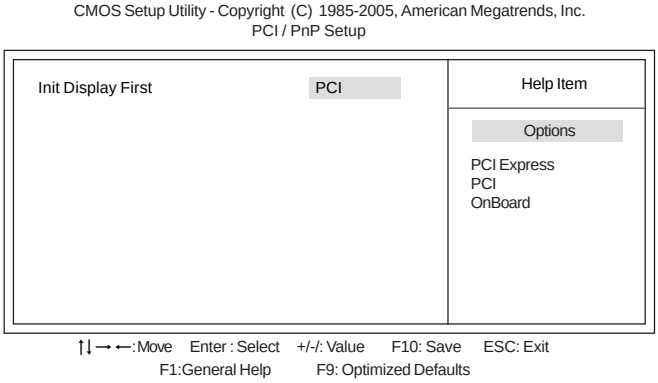
Resume By PS2 MS (S3) (Disabled)
This item enables or disables you to allow mouse activity to awaken the system from power saving mode.

Resume on RTC Alarm (Disabled)
The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

Press <Esc> to return to the main menu setting page.

PCI / PnP Setup

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.

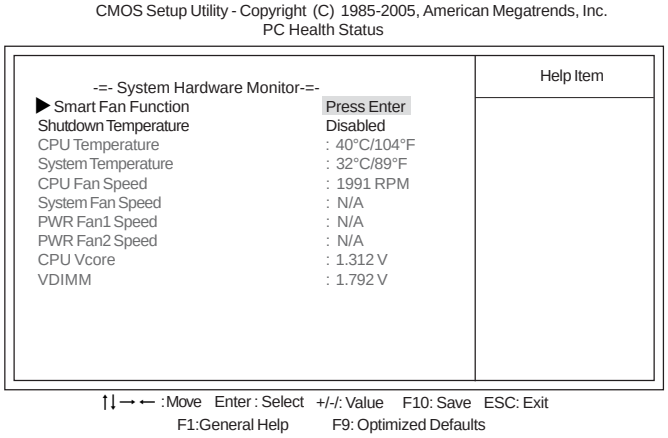


Init Display First (PCI)
Use this item to select which graphics controller to use as the primary boot devices.

Press <Esc> to return to the main menu setting page.

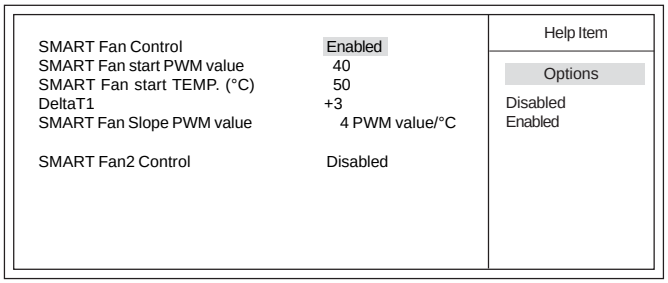
PC Health Status

On motherboards support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.



▶ Smart Fan Function

Scroll to this item and press <Enter> to view the following screen:



SMART Fan Control (Enabled)

This item allows you to enable or disable the control of the system fan speed by changing the fan voltage.

SMART Fan start PWM value (40)

This item is used to set the start PWM value of the smart fan.

SMART Fan start TEMP. (°C) (50)

This item is used to set the start temperature of the smart fan.

DeltaT1 (+3)

This item specifies the range that controls CPU temperature and keeps it from going so high or so low when smart fan works.

SMART Fan Slope PWM value (4 PWM value/°C)

This item is used to set the Slope Select PWM of the smart fan.

SMART Fan2 Control (Disabled)

This item allows you to enable or disable the control of the system fan speed by changing the fan voltage.

Press <Esc> to return to the PC Health Status page.

Shutdown Temperature (Disabled)

Enable you to set the maximum temperature the system can reach before powering down.

System Component Characteristics

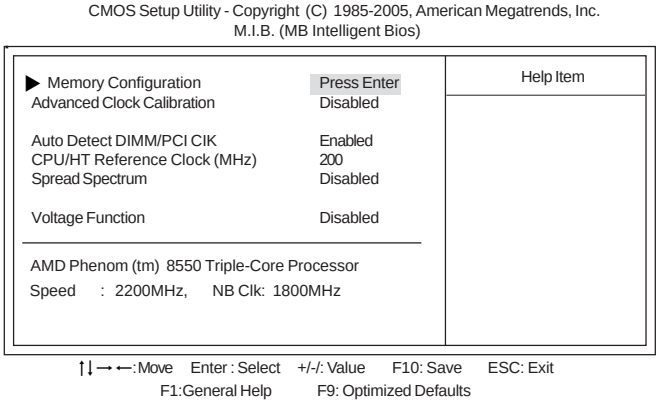
These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,...etc.

- CPU Temperature
- System Temperature
- CPU Fan Speed
- System Fan Speed
- PWR Fan1 Speed
- PWR Fan2 Speed
- CPU Vcore
- VDIMM

Press <Esc> to return to the main menu setting page.

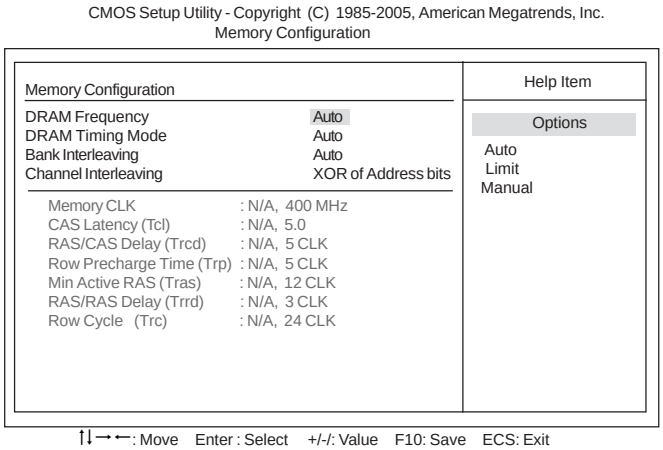
M.I.B. (MB Intelligent Bios)

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.



▶ Memory Configuration

Scroll to this item and press <Enter> to view the following screen:


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Memory Configuration
Memory Configuration
DRAM Frequency
Auto
DRAM Timing Mode
Auto
Bank Interleaving
Auto
Channel Interleaving
XOR of Address bits
Memory CLK : N/A, 400 MHz
CAS Latency (Tcl) : N/A, 5.0
RAS/CAS Delay (Trcd) : N/A, 5 CLK
Row Precharge Time (Trp) : N/A, 5 CLK
Min Active RAS (Tras) : N/A, 12 CLK
RAS/RAS Delay (Trrd) : N/A, 3 CLK
Row Cycle (Trc) : N/A, 24 CLK
Help Item
Options
Auto
Limit
Manual
↑↓→←: Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General help F9: Optimized Defaults

DRAM Frequency (Auto)

This item enables users to adjust the DRAM frequency. The default setting is auto and we recommend users leave the setting unchanged. Modify it at will may cause the system to be unstable.

DRAM Timing Mode (Auto)

This item enables you to specify the DRAM timing mode to be configured automatically or manually.

Bank Interleaving (Auto)

This item is used to set the bank interleaving.

Channel Interleaving (XOR of Address bits)

This item is used to set the channel interleaving.

Memory CLK (N/A, 400 MHz)

This item is used to set the memory clock mode.

CAS Latency (Tcl) (N/A, 5.0)

This item controls the timing delay (inclockcycles) before the DRAM starts a read command after receiving it.

RAS/CAS Delay (Trcd) (N/A, 5 CLK)

This is the amount of time a CAS is performed after a RAS. The lower the better, but some DRAM does not support low figures.

Row Precharge Time (Trp) (N/A, 5 CLK)

This item specifies the Row precharge to Active or Auto-Refresh of the same bank.

Min Active RAS (Tras) (N/A, 12 CLK)

This item determins the time RAS takes to read from and write to a memory cell.

RAS/RAS Delay (Trrd) (N/A, 3 CLK)

This item specifies the active-to-active delay of different banks.

Row Cycle (Trc) (N/A, 24 CLK)

Use this item to specify the Row Cycle Time.

Press <Esc> to return to the M.I.B. (MB Intelligent Bios) page.

Advanced Clock Calibration (Disabled)

This item can enable greater performance turning margin for the AMD Phenom™ Black Edition CPUs. The optimal gain can be seen in configurations that use high-end CPU cooling solution in combination with elevated CPU core voltage (CPU VID) value. The motherboards that support “anvanced Clock Calibration”-feature should enable power delivery capabilities that exceed the 140W CPU TDP specifications in order to maximize the performance tuning potential.

Auto Detect DIMM/PCI Clk (Enabled)

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

CPU/HT Reference Clock (MHz) (200)

Use this item to set the CPU/HT Reference Clock through clock gen.

Spread Spectrum (Disabled)

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

Voltage Function (Disabled)

Use this item to enable or disable the Voltage Function. If enable, users can increase the hardware voltage through BIOS settings.

Warning: Please pay attention that doing overvoltage may result in damage to hardware.

AMD Phenon (tm) 8550 Triple-Core Processor Speed (2200MHz)

This is display-only field and displays the information of the CPU installed in your computer.

NB Clk (1800MHz)

This item shows the frequency of Northbridge clock.

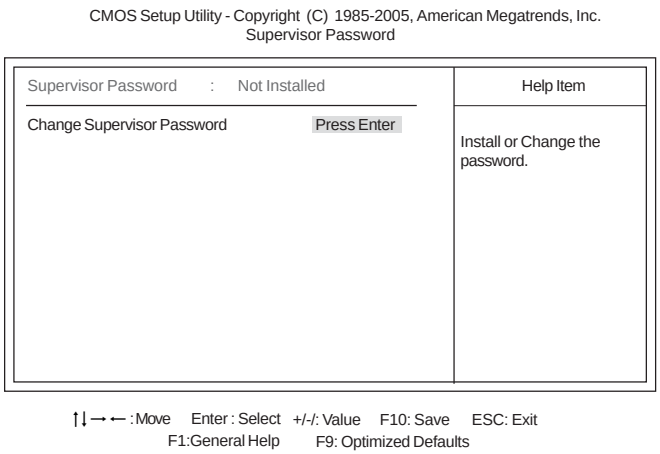
Press <Esc> to return to the main menu setting page.

Load Default Settings

This option opens a dialog box to ask if you are sure to install optimized defaults or not. You select [OK], and then press <Enter>, the Setup Utility loads all default values; or select [Cancel], and then press <Enter>, the Setup Utility does not load default values.

Supervisor Password

This page helps you install or change a password.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Supervisor Password
Supervisor Password : Not Installed
Help Item
Change Supervisor Password
Press Enter
Install or Change the password.
↑↓→←:Move Enter: Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Supervisor Password (Not Installed)

This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

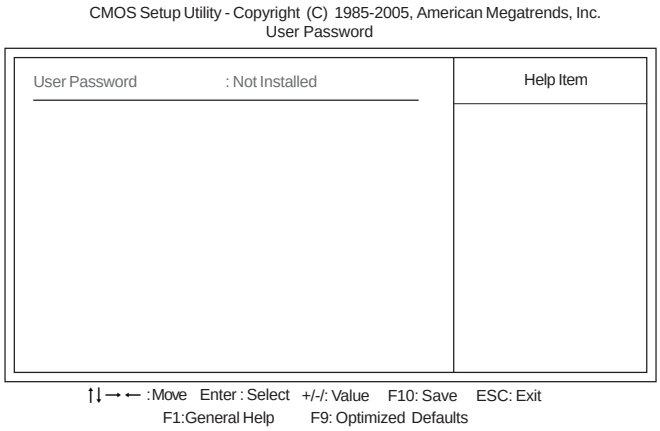
Change Supervisor Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

Press <Esc> to return to the main menu setting page.

User Password

This page helps you install or change a password.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
User Password
User Password : Not Installed
Help Item
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

User Password (Not Installed)

This item indicates whether a user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Press <Esc> to return to the main menu setting page.

Save & Exit Setup

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, select [OK] to save and exit, or select [Cancel] to return to the main menu.

Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, select [OK] to discard changes and exit, or select [Cancel] to return to the main menu.

If you have made settings that you do not want to save, use the "Exit Without Saving" item and select [OK] to discard any changes you have made.

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
2. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
3. Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the system diskette you created in Step 3.
5. Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the floppy diskette drive first.)
6. At the A:\ prompt, type the Flash Utility program name and the file name of the new bios and then press <Enter>. Example: AMINF340.EXE 040706.ROM
7. When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Chapter 4

Using the Motherboard Software

About the Software CD-ROM

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

1. Never try to install all software from folder that is not specified for use with your motherboard.

2. The notice of Intel HD Audio Installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center ***"before"*** *installing HD audio driver bundled in the driver CD. Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105# appliesto for more information.*

Auto-installing under Windows XP/Vista

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your motherboard.

If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.

The support software CD-ROM disc loads automatically under Windows XP/Vista. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.

If the opening screen does not appear; double-click the file "setup.exe" in the root directory.

Setup Tab

Setup	Click the **Setup** button to run the software installation program.
Browse CD	The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD. Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly. Some software is installed in separate folders for different operating systems. In installing the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.
Exit	The **EXIT** button closes the Auto Setup window.

Application Tab

Lists the software utilities that are available on the CD.

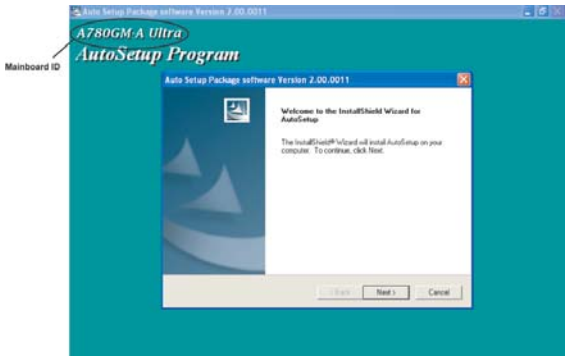
Read Me Tab

Displays the path for all software and drivers available on the CD.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

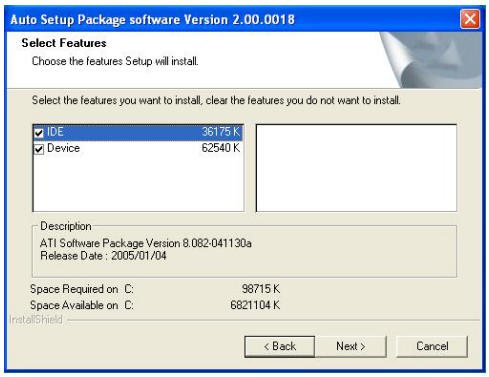
1. *Click **Setup**. The installation program begins:*



The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

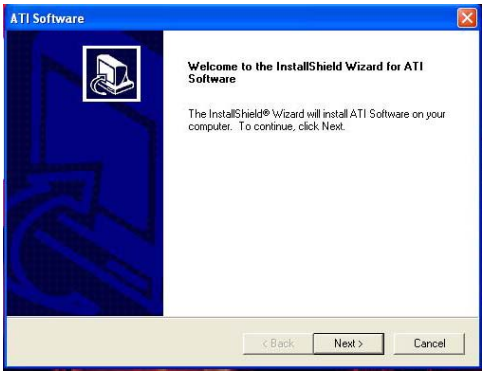
The motherboard identification is located in the upper left-hand corner.

2. *Click **Next.** The following screen appears:*


Auto Setup Package software Version 2.00.0018
Select Features
Choose the features Setup will install.
Select the features you want to install, clear the features you do not want to install.
IDE 36175 K
Device 62540 K
Description
ATI Software Package Version 8.082-041130a
Release Date : 2005/01/04
Space Required on C: 98715 K
Space Available on C: 6821104 K
InstallShield
< Back
Next >
Cancel

3. *Check the box next to the items you want to install. The default options are recommended.*

4. *Click **Next** run the Installation Wizard. An item installation screen appears:*


ATI Software
Welcome to the InstallShield Wizard for ATI Software
The InstallShield® Wizard will install ATI Software on your computer. To continue, click Next.
< Back
Next >
Cancel

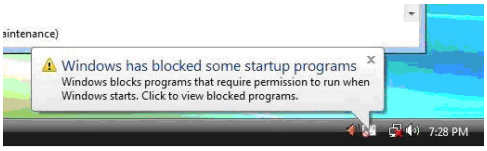
5. *Follow the instructions on the screen to install the items.*

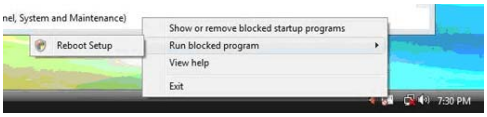
1. Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

2. During the Windows Vista Driver Auto Setup Procedure, users should use one of the following two methods to install the driver after the system restart.

Method 1. Run Reboot Setup

Windows Vista will block startup programs by default when installing drivers after the system restart. You must select taskbar icon **Run Blocked Program** and run **Reboot Setup** to install the next driver, until you finish all drivers installation.


Windows has blocked some startup programs
Windows blocks programs that require permission to run when Windows starts. Click to view blocked programs.
7:28 PM



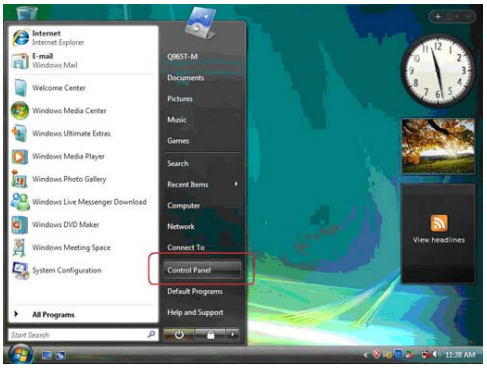
Method 2. Disable UAC (User Account Control)

* For administrator account only. Standard user account can only use Method 1.

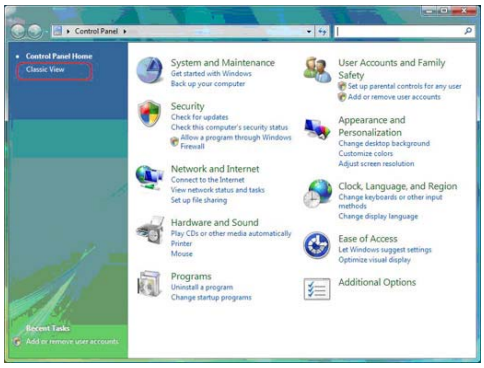
Disable Vista UAC function before installing drivers, then use CD driver to install drivers, it will continue to install drivers after system restart without running blocked programs.

Follow these instructions to Disable Vista UAC function:

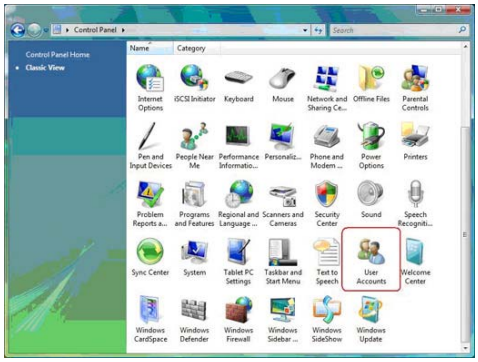
1. *Go to* ***Control Panel****.*



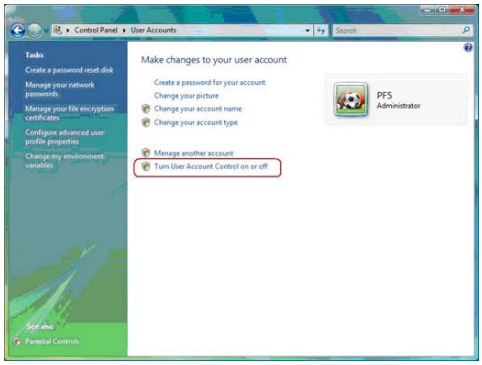
2. *Select* ***Classic View***.



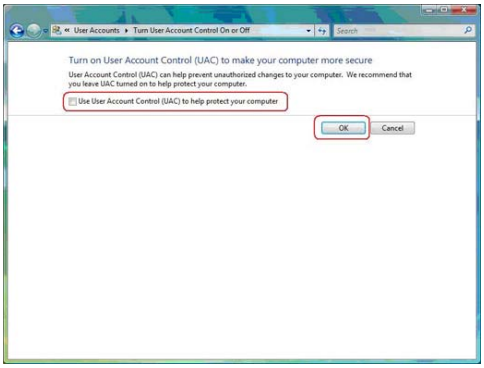
3. *Set* ***User Account***.



4. *Select* ***Turn User Account Control on or off*** *and press* ***Continue***.



5. *Disable* ***User Account Control (UAC) to help protect your computer*** *item and press* ***OK****, then press* ***Restart Now****. Then you can restart your computer and continue to install drivers without running blocked programs.*


User Accounts ▸ Turn User Account Control On or Off
Search
Turn on User Account Control (UAC) to make your computer more secure
User Account Control (UAC) can help prevent unauthorized changes to your computer. We recommend that you leave UAC turned on to help protect your computer.
Use User Account Control (UAC) to help protect your computer
OK
Cancel

Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Utility Software Reference

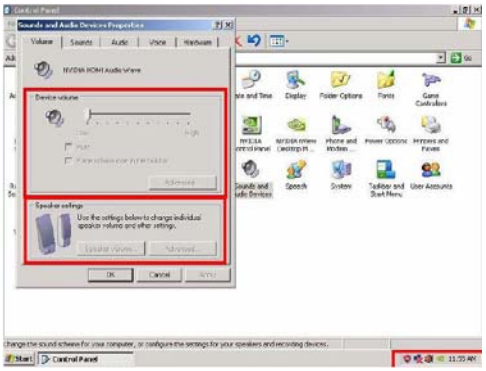
All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

1. *These software(s) are subject to change at anytime without prior no tice. Please refer to the support CD for available software.*
2. *Please go to ECS website to download AMD Cool "n" Quiet™ technology.*

HDMI Audio setting SOP

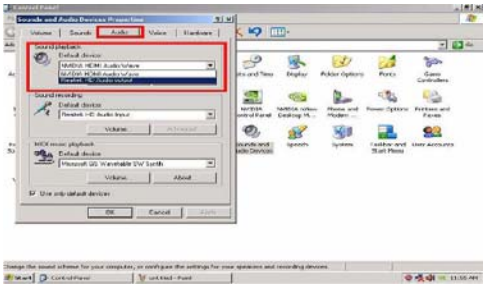
OS: XP system

1. Control Panel-->Sound and Audio Device Properties



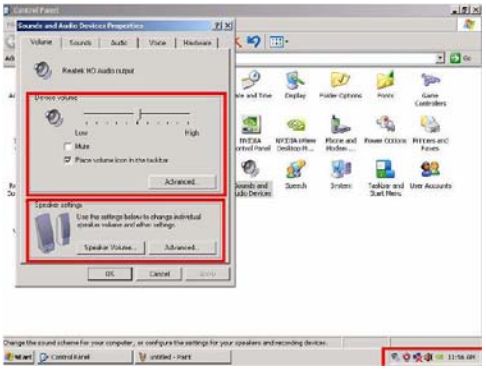
2. a. Audio--> Sound playback--> Default device--> HD Auido Output

b. Audio--> Sound playback--> Default device--> HDMI Auido Output



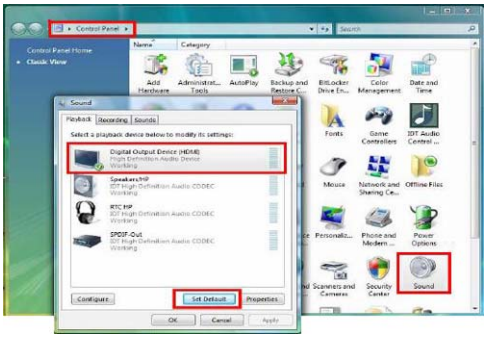
3. a. User Playback Audio speaker function working

b. User Playback HDMI speaker function working

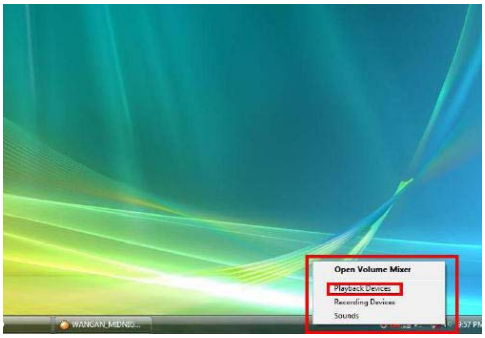


OS: Vista system

Control Panel--> Soundback--> Sound--> Digital Output Device (HDMI) --> Set Default

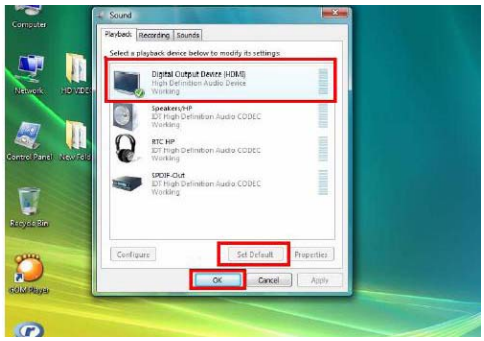


1. Volume --> Playback



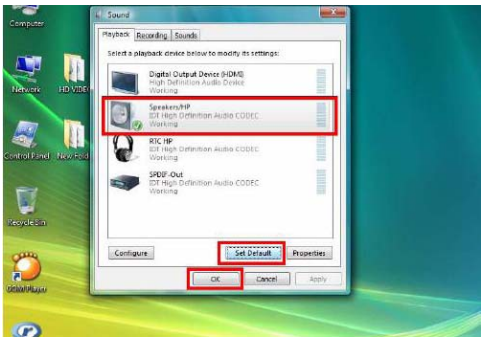
2. Digital Output Device (HDMI) --> Set Default --> OK

User HDMI Playback function working



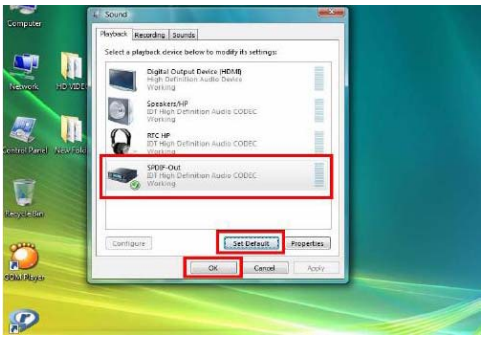
3. Speaker --> Set Default --> OK

User Speaker Palyback function working



4. SPDIF-Out --> Set Default --> OK

User SPDIF-Out Playback function working



This concludes chapter 4.

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Chapter 5

Hybrid Graphics® Technology Support

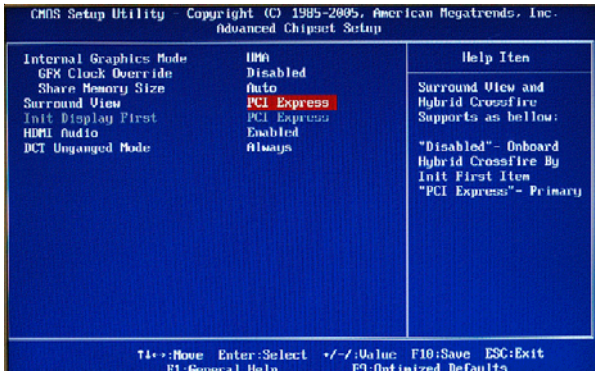
Hybrid Graphics® Technology

The Hybrid Graphics® technology provides significant display performance boost to AMD-based systems by inserting the external PCI Express graphics card and enabling both the discrete GPU and the RS780 graphics core to render simultaneously in Hybrid CrossFire™ mode.

Follow the steps below to start the Hybrid Graphics® technology.

1.Insert a graphics card (which can be used for Hybrid Graphics® technology, such as HD3400 series) into the **PCIEX16** slot.
Make sure that the card is properly seated on the slot.

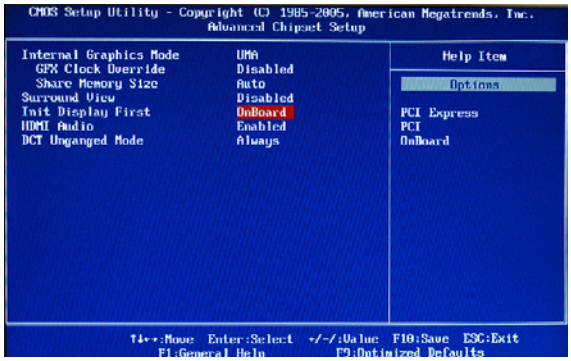
2. For Hybrid Graphics®, if display by PCI-Express, you must enter the BIOS, set the *Surround View* in *Advanced Chipset Setup* to **PCI Express**. Then press F10 to save the configuration and exit the BIOS. After entering OS, enter *Catalyst Control Center* to enable Hybrid CrossFire™.



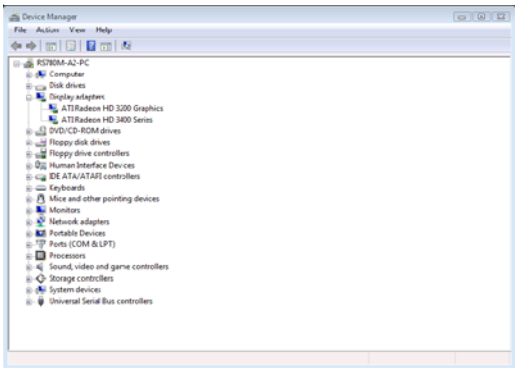
SurroundView™ provides the power and convenience of multiadapter, multimonitor support for computers that use a PCI-Express based graphics card in conjunction with ATI integrated graphic processors. And there are two options: Disabled and PCI Express.

If *SurroundView™* set to **Disabled**, and *Init Display First* set to **OnBoard**, SurroundView™ will be Enabled by Catalyst Control Center based on cancel the *Enable CrossFire™* option.

While if display by OnBoard, you must enter the BIOS, set the *Init Display First* in *Advanced Chipset Setup* to **OnBoard**. Then press F10 to save the configuration and exit the BIOS. After entering OS, enter *Catalyst Control Center* to enable CrossFire™.



3. Click with your right mouse button on *My Computer*, then click the option *Manage* and choose the *Device Manager*, finally, click the Display Adapters. The following screen appears. Be sure that the external ATI graphics (ATI Radeon HD 3400 Grapics) and Onboard graphics (ATI Radeon HD 3200 Series) are both displaying in the Display adapters.



4. Enter Catalyst Control Center, you can see the option of *CrossFire™*, click it and select *Enable CrossFire™*, then Hybrid Graphics® starts.

Catalyst Control Center
View
Hotkeys
Profiles
Preferences
Help
Graphics Settings
Welcome
Information Center
Displays Manager
Display Options
Monitor Properties 1
3D
Color
Avivo™ Video
ATI Overdrive™
CrossFire™
CrossFire™
Graphics Adapter :
1.ATI Radeon HD 3400 Series [BenQ FP222WH]
CrossFire™ Settings
CrossFire™ delivers exceptional performance on a single display by combining the processing power of two or more Graphics Processing Units (GPUs).
Enable CrossFire™
When enabling CrossFire™, it is highly recommended that you leave Catalyst® A.I. in the "Standard" position. Visual corruption or application issues may be seen in the Catalyst® A.I. "Advanced" position.
Click on 3D in the navigation tree to review or change either of these 3D settings.
CrossFire™ has now started. When you disable this feature, you will need to restore your previous display settings (creating a profile will make this easier).
For more information, press F1
ATI
RADEON
GRAPHICS
Basic...
OK
Apply
Discard
Defaults

To disable Hybrid Graphics®, please make sure to cancel *Enable CrossFire™* in *Catalyst Control Center* firstly.

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